CLAIMS

1. A bioactive polypeptide, MF3, with a primary structure depicted in SEQ ID NO:1, an active fragment of MF3, or any functional derivative of MF3, said polypeptide, active fragment or functional derivative being capable of effecting a resistance of a plant against microbial diseases and/or against attack of plant parasites.

2. An isolated DNA sequence depicted in SEQ ID:2, or fragment thereof, encoding a functionally active MF3 or its active fragment according to claim 1, wherein said DNA fragment may contain degenerate codons.

3. A method of acquiring resistance of a plant against microbes and/or plant parasites by introducing the bioactive polypeptide MF3,or an active fragment, or a functional derivative thereof into plants mechanically or by means of carrier molecules.

4. The method according to claim 3, wherein the carrier is chitosan.

5. A vector comprising the DNA according to claim 2.

6. The method of generating a transgenic plant or plant cell culture comprising a vector according to claim 5, wherein the plant cells express the polypeptide encoded by the DNA.

7. A host cell stably transformed or tranfected with a vector of claim 5.

8. A plant protectant composition comprising isolated components of claim 1.

9. The active fragment of MF3 according to claim 1, wherein the amino acid sequence consists of SEQ ID:3 or SEQ ID:4.

10. A method of isolating and purifying the polypeptide of claim 1 from bacterial cells expressing said polypeptide, the method comprising the steps:

a) cultivating a microbial producer strain and extracting cells with a buffer solution at an elevated temperature;

b) precipitating a crude MF3 polypeptide at low temperature with a precipitant;

c) fractionating re-dissolved precipitate by an anion exchange chromatography column and collecting fractions with anti-microbial or anti-insect activities;

d) performing polyacrylamide gel electrophoresis of the polypeptide fractions with anti-microbial, anti-nematode, or anti-insect activities;

e) recovering the protein eluted from the gel of step d.

SUMMARY OF THE INVENTION

The object of the invention is a protein, termed MF3, or a functional derivative thereof with a novel structure that surprisingly can induce multiple resistance in plants toward a variety of viral and microbial infections and against pests. The invention also concerns an isolated DNA sequence encoding MF3 protein, as such, or as a part of any DNA sequence, or a fragment thereof, or DNA sequences which have degenerate codons with respect to the DNA sequence defined above. The invention also concerns a method of isolating and purifying the protein MF3 from bacterial cells expressing the said protein and its use as a plant protectant with or without carrier agent Furthermore, the invention concerns a method of obtaining transgenic plants expressing said protein. A further object of the invention is the use of the protein, or of compositions containing the same, as a plant protectant, biopesticide for inducing resistance of plants to viral, microbial phytopathogens and pests.

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